

Remarks

Claims 1-6 and 8-10 are pending in the application. Claim 1 has been amended. Figure 3 has been amended. The specification has been amended. Re-examination and reconsideration of the application is respectfully requested for the reasons set forth herein.

1. The Examiner has objected to the drawings under 37 CFR 1.83(a), because the drawings do not show each and every feature of the invention as specified in the claims. Specifically, the Examiner stated that the limitation "the sides having the first portion deform when heated such that ends of the sides not having the first portion approach each other to reduce tension in the mask" must be shown or the feature(s) cancelled from the claims.

A proposed drawing correction of Figure 3 has been submitted showing the limitation that "the sides having the first portion deform when heated such that ends of the sides not having the first portion approach each other to reduce tension in the mask." The specification has also been amended to refer to the correction shown in the proposed drawing. Approval of the proposed drawing correction, the amendment to the specification and removal of the objection to the drawings is respectfully requested.

2. The Examiner has rejected claims 1-6 and 8-10 because of an informality. Specifically, claim 1, line 3 is missing a word in the limitation "under tension a tension direction." Claims 2-6 and 8-10 are objected to because of their dependancy status from claim 1.

Claim 1 has been amended to state "under tension along a tension direction." In view of this amendment, removal of the objection to claims 1-6 and 8-10 is respectfully requested.

3. The Examiner has rejected claims 1-6 and 8-10 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner stated that claim 1, lines 13-14, refers to "said metal piece and said support means having...", however, in lines 9-13, said support means comprise said metal piece. The Examiner, therefore, concluded that claim 1 is indefinite for double inclusion of the same element. Claims 2-6 and 8-10 are objected to because of their dependancy status from claim 1.

Claim 1 has been amended to state "said metal piece and said support means having...." In view of this amendment, removal of the objection to claims 1-6 and 8-10 is respectfully requested.

4. The Examiner has rejected claims 1, 3, 5, 8 and 10 under 35 U.S.C. 102(b as being anticipated by Palac (U.S. Patent No. 4,164,682).

With regard to claim 1, the Examiner stated that Palac discloses a cathode-ray tube 2 having a glass faceplate on which is deposited a screen of luminescent materials. A color-selection mask 126 is arranged close to the screen. A frame 124 to which the mask 126 is fixed holds the mask 126 under tension. The frame 124 is substantially rectangular in shape and is defined by a pair of opposed long sides and a pair of opposed short sides. At least two sides include an edge in the form of a metal part (Figure 10) substantially parallel to a surface of the mask 126. The frame/mask assembly is held within the faceplate by support means engaging pins 140 fixed to the faceplate. The support means comprises a metal piece 128 including a first portion 130 secured by welding 139 to the metal part. The first portion attached opposite a surface of the mask and extending in a direction substantially perpendicular to the first portion

for securing the frame to the glass plate. The support means having a coefficient of thermal expansion that causes the sides having the first portion to deform when heated such that ends of the sides not having the first portion approach each other to reduce the tension in the mask during heating (column 9, lines 39-45). The Examiner further stated that portion 130, comprising portions 132 and 142, are welded to the mask frame and that the portion 130 and an edge of the frame in the form of a metal part lay on a geometrical plane parallel to the plane of the shadow mask. The portion 130 has a coefficient of thermal expansion such that upon heating of the mask, it bends out of its plane, thus, deforming the sides comprising said portion 130. This "bending out" (column 9, line 43) is different from the "shifting" motion disclosed by Miller (U.S. Patent No. 3,873,875) in which there is no deformation of the sides containing the support means. The Examiner, therefore, concluded that Palac teaches all of the claim limitations of claim 1.

Claim 1 states that the support means comprises "a metal piece including a first portion secured by welding to the metal part, said first portion attached opposite a surface of the mask and extending in a direction parallel to the tension direction of the mask,...said metal part and said support means having coefficients of thermal expansion that cause the sides having the first portion to deform when heated such that ends of the sides not having the first portion approach each other to reduce the tension in the mask during heating." In the claimed invention, a first portion of a support means is welded to metal part of at least two sides of a frame. The first portion is welded to the metal part such that it *extends in a direction parallel to a tension direction* of a tension mask held between the sides of the frame. The support means, which is welded to the metal part, and the metal part have coefficients of thermal expansion that cause the *sides* having the first portion welded thereon to deform when heated such that *ends of the sides*

not having the first portion welded thereon approach each other. As a result of this bending action, a curved deformation of the ends of the sides not having the first portion welded thereon occurs to reduce tension in the mask that occurs during heating.

Palac teaches a mask suspension device 128 comprising a novel thermally compensating article 130 including a bracket 132 welded to a frame 124 made of the same material as the bracket 132 (column 8, lines 59-60). The bracket 132 has a leg 136 for attachment of a leaf spring 138 that secures the frame 124 to a front panel 120. A strip 142 having a different coefficient of thermal expansion than the bracket 132 is welded to a surface of the bracket 132. "Upon heating of the mask assembly, the bracket means 132 bends out of its plane to effect the compensating adjustment in the spatial position of the mask assembly relative to the faceplate portion" (column 9, lines 41-45). Palac defined this "compensating adjustment" as "Q" compensation or adjustment of the distance between the mask and the faceplate (column 1, lines 39-44). As such, the structural arrangement of the strip 142 arranged on the bracket 132 causes the bracket 132 to bend out of its plane causing the entire mask assembly to move relative to the faceplate portion. As such, ends of the sides not having the bracket 132 welded thereon would not approach each other and tension would not be reduced in a tension mask tensioned between sides of the frame 124. The Applicant respectfully disagrees with the Examiner in that this positional shift *is* similar to the shift shown in Figure 5 of Miller (U.S. Patent No. 3,873,875). Miller teaches a bi-metallic element 40 comprised of two contiguous layers 42, 44 having different coefficients of thermal expansion. The bi-metallic element is welded to a flange 36 of a frame 32 such that upon heating, the bi-metallic element bends to cause a downward movement of the mask and frame 32. As discussed in column 4, line 49 to column 5, line 24 of Palac, the invention of Palac was devised to solve the same problem of Miller but in such a way as to

overcome high cost and welding difficulties associated with bi-metallic materials. The structural arrangement of Palac, therefore, is unlike the claimed invention where the support means welded to the metal part has a different-coefficient of thermal expansion than the metal part and, as such, the support means causes the ends of the sides not having the support means welded thereon to approach each other to reduce tension in the mask during heating. Because Palac fails to teach all of the elements of claim 1 in as complete detail as defined in the claim, removal of the rejection of claim 1 under 35 U.S.C. 102 (b) is respectfully requested.

Claims 3, 5, 8 and 10 depend from claim 1. As previously discussed, Palac does not teach all of the claim limitations of claim 1. Because Palac does not teach all of the claim limitations of claim 1, Palac does not teach all of the claim limitations of dependant claims 3, 5, 8 and 10. Removal of the rejection of claims 3, 5, 8 and 10 under 35 U.S.C. 102(b) is respectfully requested.

5. The Examiner has rejected claim 6 under 35 U.S.C. 103(a) as being unpatentable over Palac (U.S. Patent No. 4,164,682).

With regard to claim 6, the Examiner stated that Palac discloses all of the claim limitations of claim 6 as previously discussed, except "the coefficient of thermal expansion (CTE) of the metal piece being higher than that of the edges of the frame." The Examiner further stated that Palac discloses an embodiment where thermal compensation is obtained having edges with a higher CTE than that of the metal piece. Palac further discloses that the desired amount of thermal "Q" compensation can be provided by selecting an appropriate physical parameter of the metal piece by the number of welds and by appropriate selection of the metal piece materials. It has also been held to be within the general skill of a worker skilled in

the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. The Examiner, therefore, concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the CTE of the metal piece higher than that of the edges of the frame, since the selection of known materials for a known purpose is within the skill of the art and because Palac teaches that the desired amount of thermal "Q" compensation can be provided by selecting the appropriate physical parameter of the metal piece, by the number of welds, and by appropriate selection of the metal piece materials.

Claim 3 depends from claim 1. As previously discussed, Palac does not teach all of the elements of claim 1. Because Palac does not teach all of the elements of claim 1, except the coefficient of thermal expansion (CTE) of the metal piece being higher than that of the edges of the frame, Palac does not teach or suggest all of the claim limitations of claim 6. Because the Examiner has failed to set forth a prima facie case of obviousness, removal of the rejection of claim 6 under 35 U.S.C. 103(a) is respectfully requested.

6. The Examiner has rejected claims 2 and 4 under 35 U.S.C. 103(a) as being unpatentable over Palac (U.S. Patent No. 4,164,682) in view of Miller (U.S. Patent No. 3,873,875).

With regard to claim 2, the Examiner stated that Palac discloses all of the claim limitations of claim 2 as previously discussed, except "the first portions being arranged at an end of the frame." The Examiner further stated that Miller discloses a CRT having three support means. The first portion of the support means is arranged at an end of a frame for reducing the active length of the first portion and for compensating for the fact that the side mounted elements are not on the horizontal axis, improving the alignment of the frame. The Examiner, therefore,

concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the first portion of Palac at an end of the frame, since Miller teaches such an arrangement for reducing the active length of the first portion and compensating for the fact that the side mounted elements are not on the horizontal axis, improving alignment of the mask.

Claim 2 depends from claim 1. As previously discussed, Palac does not teach all of the elements of claim 1. Because Palac does not teach all of the elements of claim 1, except the first portions being arranged at an end of the frame, the combination of Palac in view of Miller does not teach or suggest all of the claim limitations of claim 2. Because the Examiner has failed to set forth a prima facie case of obviousness, removal of the rejection of claim 2 under 35 U.S.C. 103(a) is respectfully requested.

With regard to claim 4, the Examiner stated that Palac and Miller disclose the short sides of the frame including an edge in the form of a metal part substantially parallel to the surface of the mask.

Claim 4 depends from claim 1. As previously discussed, Palac does not teach all of the elements of claim 1. Because Palac does not teach all of the elements of claim 1, except the short sides of the frame including an edge in the form of a metal part substantially parallel to the surface of the mask, the combination of Palac in view of Miller does not teach or suggest all of the claim limitations of claim 4. Because the Examiner has failed to set forth a prima facie case of obviousness, removal of the rejection of claim 4 under 35 U.S.C. 103(a) is respectfully requested.

7. The Examiner has rejected claim 9 under 35 U.S.C. 103(a) as being unpatentable over Palac (U.S. Patent No. 4,164,682) in view of Sakata et al. (U.S. Patent No. 5,214,349).

With regard to claim 9, the Examiner stated that Palac discloses all of the claim limitations of claim 9 as previously discussed, except "two opposing sides of the frame each having two supporting means attached thereto, the first portion of the supporting means covering about forty percent of each of the sides of the frame." The Examiner further stated that Sakata et al. discloses a mask assembly comprising four support means and teaches the equivalence of placing the support pins at the corners, arranging them toward the inner part of the panel in the vicinity of the corner portion, or providing opposed sides with two support pins. In Figure 29 of Sakata et al., the support pins are placed on the short sides of the frame. The Examiner, therefore, concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings of Sakata et al. to modify the assembly of Palac, since Sakata et al. teaches that it is equivalent to place the support pins at the corners, arrange them toward an inner part of the panel in the vicinity of the corner portion, or provide opposed sides with two support pins. Further, it has been held that where the general conditions of a claim are disclosed in the prior art that discovering the optimum or workable ranges for a change in size or length involves only routine skill in the art. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the first portion to cover about forty percent of each of the sides, since it is generally considered to be within the ordinary skill in the art to adjust, vary, select or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value.

Claim 9 depends from claim 1. As previously discussed, Palac does not teach all of the elements of claim 1. Because Palac does not teach all of the elements of claim 1, except two

opposing sides of the frame each having two supporting means attached thereto, the first portion of the supporting means covering about forty percent of each of the sides of the frame, the combination of Palac in view of Sakata et al. does not teach or suggest all of the claim limitations of claim 9. Because the Examiner has failed to set forth a prima facie case of obviousness, removal of the rejection of claim 9 under 35 U.S.C. 103(a) is respectfully requested.

In view of the arguments and amendments presented herein, the application is believed to be in condition for allowance. Reconsideration and passage to issue is respectfully requested.

Please charge and additional fees associated with this application to Deposit Order Account Number 07-0832.

Respectfully submitted,
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